

Beazer

BEAZER EAST, INC. C/O THREE RIVERS MANAGEMENT, INC.
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December 19, 2008

Mr. Chris Kanakis
Department of Environmental Protection
Site Remediation and Waste Management
Office of Brownfield Reuse
401 East State St. 6th Floor
PO Box 028
Trenton, NJ 08625

Mr. Frank Faranca
Department of Environmental Protection
Bureau of Case Management
401 East State St. 5th Floor
PO Box 028
Trenton, NJ 08625

Re: Remedial Investigation Report for:
Standard Chlorine Chemical Co. Site (SCC/116)
Diamond Shamrock Site (Diamond/113)
Koppers Seaboard Site (Beazer East)
Kearny Town, Hudson County
SRP PI# G000001583 & G000008790 & G000001985
Activity # NOD080001 - G000001583

Dear Mr. Kanakis and Mr. Faranca:

The Peninsula Restoration Group (PRG) acknowledges receipt of New Jersey Department of Environmental Protection's (NJDEP's) August 5, 2008 Notice of Deficiency ("NOD") and comments to the June 2007 Remedial Investigation Report (RI Report), Revision 0, for the Hackensack River Study Area (HRSA). Responses to each of the comments presented in the above-referenced correspondence are provided below. With NJDEP's consent the deadline for responding to the NOD has been extended to December 22, 2008. In addition, the PRG is submitting the enclosed RI Report, Revision 1 dated December 2008 (revised RI Report) along with this letter.

We would, however, like to clarify certain general matters discussed in the NOD. First, although it is accurate to note that the RI Report for the HRSA was submitted jointly pursuant to the respective Administrative Consent Orders (ACOs) for the Diamond Shamrock (Diamond), Standard Chlorine Chemical Company (SCCC), and Koppers Seaboard (Seaboard) sites, we disagree that the RI Report is not in compliance with those ACOs. Second, in evaluating the particular deficiencies called out in the NOD, it is important to keep in mind the genesis and scope of the agreement regarding preparation of the HRSA RI Report. All three sites are, or will be, the subject of separate Remedial Investigations and Reports prepared pursuant to each ACO as a matter separate from the HRSA RI Report. The Diamond Site Revised RI Report was submitted to NJDEP on June 12, 2008, following the implementation of a NJDEP-approved Remedial Investigation Work Plan (RIWP), Supplemental RIWP and Pore Water Sampling Work

Plan that collectively included the evaluation of sediment, sediment pore water and surface waters, in accordance with the Diamond Site ACO. Likewise, as the NJDEP is well aware, the recently approved Interim Remedial Action Work Plan (IRAW) under the SCCC ACO was created in order to expedite certain components of remedial work at that site, while other matters were to be investigated and designed as part of an additional Supplemental Remedial Investigation (RI). Prior RI reports submitted to and approved by NJDEP include: the 1993 RI Report, the 1997 Focused RI Report and the 1999 Supplemental RI Report. Furthermore, the Seaboard Site Remedial Investigation has been deemed complete by NJDEP.

In addition, the HRSA RIWP was designed as a limited and focused investigation that the PRG would perform to get a preliminary understanding of sediment constituents in the HRSA. There were two objectives for that work:

- Determine the preliminary nature and extent of constituents in HRSA sediments.
- Conduct a screening-level ecological risk assessment (SLERA).

The scope of the investigation was approved by NJDEP and, as described in this response to comments, the PRG believes that both of these objectives were met and described accordingly in the HRSA RI Report. As for the applicability of the ACOs, what was accepted by all parties was that, to the extent of the agreed upon RIWP for the HRSA, submissions would be in accordance with the ACOs. The December 22, 2005 letter from the PRG submitting the RIWP makes this point clear, among others. We therefore do not understand the assertion in the NOD that the HRSA RI Report based on the approved HRSA RIWP does not meet the requirements of an RI under the ACOs or the Technical Requirements for Site Remediation. Moreover, inasmuch as the agreed upon HRSA RIWP was conducted under the ACOs (to the extent applicable), the issuance of the NOD is inappropriate because the Grace Period rules are inapplicable to work under those ACOs for all of the reasons we have previously discussed.

Finally, while NJDEP may have reserved its position that further work might be needed, NJDEP cannot fairly suggest that the HRSA RI Report is itself deficient because it did not include components beyond those mutually agreed upon in the RIWP. Consistent with previous correspondence with NJDEP (July 20, 2006 letter to Mr. Christopher Kanakis), the PRG has always understood that this RI process for the HRSA was to be performed in a logical and step-wise fashion. As such, it is possible (and likely, as described in the responses below) that additional work will be required to more fully characterize the HRSA.

Comment:

1. **The NJDEP's June 20, 2006 letter, which conditionally approved the December 2005 "Hackensack River Study Area Remedial Investigation Work Plan" (RIWP) informed the Responsible Parties that the RIWP did not address/incorporate all of the technical comments and concerns contained within correspondence transmitted by the NJDEP and the Federal trustees (see enclosed June 20, 2006 letter). The NJDEP's approval also informed the responsible parties that by failing to incorporate all of its technical comments, it is extremely likely that subsequent investigation activities will be required. Finally, Comment 10 of the June 20, 2006 conditional approval letter specifically states "...if it is determined from the SLERA that a Baseline Ecological Risk Assessment (BERA) is needed to better define potentially unacceptable risks at the Site, the BERA may require additional site-specific data collection." Therefore, because the need for a BERA is clearly indicated, the Responsible Parties must incorporate the collection of additional data, consistent with all of NJDEP's previous and current correspondence, within the preparation of the required BERA.**

Response:

The PRG agrees to conduct a baseline ecological risk assessment (BERA), and as such, will prepare a Supplemental RIWP (subsequent to the revised RI Report) fully describing the associated sampling and analyses. In addition to risk-related data collection activities, this work plan will also include the collection of sediment cores for purposes of further delineating HRSA constituents of interest (COIs). The types of data to be collected, as well as the sampling locations and numbers, will be developed in consideration of the comments in this letter and those from the June 20, 2006 letter referenced above. Information shared at the October 22, 2008 meeting among the PRG, NJDEP and other partner agencies, will also be factored into the plan's development.

To provide an overview of the anticipated BERA sampling scope, the PRG has developed a list of data gaps in the revised RI Report, along with a general discussion of the types of field activities to be conducted to fill such data gaps. Again, more detail will be provided in the future Supplemental RIWP, expected to be submitted to NJDEP by January 30, 2009.

Comment:

2. **The "Remedial Investigation Data Summary", is essentially limited to the discussion of percent samples with detected values, concentration ranges, and locations of highest concentrations. There is no discussion presented regarding the general distribution patterns of contamination, which along with the emphasis on the highest concentrations, provides a distorted view of the data. For example, it was stated the highest river surface sediment concentration of PAHs was at Station 12, but it was not mentioned that the second highest PAH concentration was identified at Station 32, immediately across from the Standard Chlorine site. Another example is the discussion of the highest surface sediment concentration of hexavalent chromium in the Hackensack River at Station 05 but the lack of discussion of the clustering of relatively high concentrations in the general vicinity of the three sites between Transects 15 and 25.**

Response:

The purpose of Section 4, Remedial Investigation Data Summary, was to provide an overview of the sediment sampling results. A more detailed discussion of the distribution patterns of the COIs was provided in Section 5, Remedial Investigation Data Analysis. Section 5 addressed horizontal and vertical trends for COIs in sediment, including the examples (polynuclear aromatic hydrocarbons [PAHs] and hexavalent chromium) listed in this comment. These sections were prepared to provide the reader with an evaluation of constituents in sediment consistent with the objective set forth in the RIWP.

Section 5.1.2.6 (page 5-9) of the RI Report discussed the spatial trend of PAHs. It is not correct that the second highest PAH concentration was detected in Core 032. In the surface samples, the highest concentration was observed at Transect 11 (Core 012; 52,100,000 micrograms per kilogram [$\mu\text{g/kg}$]). The second and third highest values were observed along Transects 5 (Core 006; 1,020,000 $\mu\text{g/kg}$) and 11 (Core 011; 890,000 $\mu\text{g/kg}$), respectively. The PAH concentration in Core 032 (300,000 $\mu\text{g/kg}$) was the fourth highest detected, but was more than 173 times lower than detected in surface sediments downriver. In the sub-surface samples, PAH concentrations were again highest along Transect 11 (Core 012; 69,800,000 $\mu\text{g/kg}$). The sub-surface PAH concentration at Core 032 was one of the lowest detected at 2,200 $\mu\text{g/kg}$.

Additionally, Section 5.1.3.2 (page 5-11) of the RI Report discussed the spatial trends of hexavalent chromium detected in the HRSA. First, it is important to clarify that the sediment in the HRSA is reducing in nature as evidenced by the potential of hydrogen (pH) and oxidation-reduction potential (ORP) sample results. Under reducing conditions, chromium in the +6 valence state (i.e., hexavalent chromium) is not capable of being sustained as it will readily reduce to chromium in the +3 valence state. The detections of hexavalent chromium are clearly inconsistent with the redox chemistry of the samples and may be anomalous or the result of analytical interferences. That being said, it is not correct to state that high concentrations of hexavalent chromium were detected in the vicinity of the three sites, or more importantly, in the vicinity of the former Diamond and SCCC Sites, which are the sites that pose a potential concern relative to hexavalent chromium. The highest concentrations of hexavalent chromium (ranging from 12.9 to 19.7 milligrams per kilogram [mg/kg]) were detected in samples collected at Transect 5, in the southern section of the HRSA. For the remaining core samples in the HRSA, hexavalent chromium concentrations were less than 3 mg/kg, with the exception of Core 013 (7.6 mg/kg), Core 028 (6.9 mg/kg), and Core 030 (6.2 mg/kg). These samples are not in the vicinity of the former Diamond and SCCC Sites. In fact, there are several HRSA samples closer to these Sites that exhibited lower concentrations (up to 2 mg/kg). It is important to note that during other sampling events higher hexavalent chromium concentrations were detected in near shore samples along the former Diamond and SCCC Sites. However, these levels of hexavalent chromium, which are found very close to shore, are associated with the presence of fill material containing chromite ore processing residue (COPR) that was historically deposited at the two sites and that will be removed as part of the IRAW remedial activities. To assist in future data analysis discussions, the PRG has enhanced the discussion and spatial plot presentation in Section 5 of the revised RI Report to provide greater details on the overall nature/extent of contamination.

Comment:

3. **The December 2005 "Hackensack River Study Area Remedial Investigation Workplan" (RIWP) did not propose sediments sampling in all mudflats within the limits of the study area. In fact, six of the mudflats were not sampled and no samples were collected from either of the two mudflats (one of which is extensive) that are located adjacent to the three sites (MFs 8 and 11). The mudflat data are biased to samples taken either on the far side of the river or downstream of the sites and evaluation of these data must take into consideration this bias. Future sampling and data evaluation conducted for the BERA must include the other six mudflats and any historical data collected from the additional six mudflats.**

Response:

By substantially sampling 50 percent (6 of 12) of the existing mudflats (which are homogeneous in structure and function) in the HRSA, a representative characterization of the widespread urban sediment quality in this system has been captured. In addition, the distribution of the constituents in the river sediments, as reported in the RI Report, supports this conclusion. However, as requested by the NJDEP, the PRG will sample the remaining mudflats as part of the next sampling event (i.e., part of the Supplemental RIWP). Additional detail is provided in Section 7 of the revised RI Report.

It is important to note that, as part of the IRAW Pre-Design Study, Mudflat 11 was sampled by the PRG in 2008. The primary focus of this sampling effort was to support waste classification and the on-site consolidation of the excavated sediments. A total of 23 locations were sampled along Mudflat 11 near the Sites, and the samples were analyzed for the same set of parameters as was done for the HRSA RI. This sampling effort was taken into consideration when developing the plan for additional data collection activities (see Section 7 of revised RI Report).

Comment:

4. **Figures 5-1 to 5-18 of the RI Report, which graph measured concentrations for select chemicals by station and depth, are of limited value because it is difficult if not impossible to determine what depths are represented by individual squares and there is no indication as to which samples represent non-detect values. Secondly, since dating of sediments was unsuccessful, samples from different depths in different cores can not be reliably compared. Because of these problems, outside of the locations of the highest concentrations, it is difficult to determine the existence of any trends. The only visible trend is the apparent elevation of dichloro- and trichloro-benzene concentrations in an area proximate to the Standard Chlorine site and the general elevation of hexavalent chromium concentrations in the vicinity of the three sites.**

Response:

The graphs in Figures 5-1 through 5-19 represented a concise method for portraying large sets of data, both spatially and vertically, to assist in evaluation of trends. As stated in Section 5.1 (page 5-2) of the RI Report, given the similarities in detected concentrations, samples from different depth intervals were presented on the same graphs. The depths of individual samples (represented as squares) are characterized by differing colors as indicated in the legend on each chart. In this way, samples from the same depth interval across different cores could be compared. In addition, as stated in the notes on the figures in the RI Report, non-detect values were represented as one half the method detection limit, which is consistent with how the data were evaluated in the Screening Level Ecological Risk Assessment (SLERA). Having said that, these graphs have been improved upon, to the extent practicable, in the revised RI Report. Additionally, figures depicting the concentration ranges for COIs by depth interval are included in the revised RI Report.

The general trend of elevated concentrations of di- and trichlorobenzene in the vicinity of the sites was mentioned in Section 5.1.2 (page 5-6) of the RI Report. Three Transects (21, 23 and 24) yielded relatively higher concentrations of these COIs compared to other transects in the HRSA. However, the PRG disagrees with the statement regarding the general elevation of hexavalent chromium in the vicinity of the three sites, as discussed in Section 5.1.3.2 (page 5-11) of the RI Report and in response to Comment 2 above.

Comment:

5. **It was stated in Section 5.3 of the RI Report (Geotechnical) that river sediments varied between sand and silt with more sand at the surface and more silt with depth. This section should clarify that percent fines in surface sediments varied from 1-97% with a median value of 35.5%; more than 25% of the river surface samples had greater than 80% fines.**

Response:

A discussion of the spatial variability of the percent fines data is provided in the revised RI Report. In addition, the percent fines data for each location are presented on figures included in Section 4 of the revised RI Report.

Comment:

6. Total organic carbon (TOC) values varied from <0.041 to 22% with a median value of 1.9%. Only two samples had greater than 10% TOC and only five samples had greater than 5% TOC. It was further stated that grain size and TOC data were compared to determine if there was any correlation between the two and it was concluded there was none. However, there was no apparent attempt to see if there was any relationship between contaminant concentrations and either grain size or TOC. This evaluation should be conducted and presented.

Response:

A discussion of the comparison of total organic carbon (TOC) with organic constituents was included in Section 5.1.7 (page 5-18) of the RI Report. A majority of the comparisons did not display strong correlation patterns; therefore, this assessment was not pursued further. An assessment of COI concentrations and grain size is included in the revised RI Report.

Comment:

7. Because no data were collected from mudflats adjacent to the three sites, it is difficult to draw overall conclusions regarding the general distribution of contaminants in the river and adjacent mudflats. However it is interesting to note that Station 012 had the highest surface concentrations of eight organic contaminants (toluene, naphthalene, PAH, cyanide, 4,4 DDD, 4,4 DDE, DDT, & TEPH) and the highest TOC concentration of 22% (no fines data were available) and that Station 05 had the highest surface concentrations of five contaminants (hexavalent chromium, mercury, total PCB congeners, 4,4-DDT, and 2,3,7,8-TCDD) and had moderately high TOC (3.7%), moderately high fines (64%), and was also the only station with Be⁷ activity. A more detailed analysis could be conducted if the data were available in a readily accessible format, as discussed below.

The data should be provided in a database format so that reviewers can conduct their own evaluation. All data from the Hackensack River Study Area RI Report are currently provided in PDF format (or hard copy) which does not allow for independent evaluation without an unreasonable amount of effort. NOAA requests a copy of Appendix D in a database format so that these data can be imported into NOAA's Newark Bay database. NOAA also requests that future data generated as part of this investigation are provided in database format as part of report deliverables.

Response:

Please see response to Comment No. 6 regarding the correlation between TOC and constituent concentrations.

The analytical database was provided to NJDEP and the partner agencies on December 9, 2008 in Microsoft Access format.

Comment:

8. Be⁷ was analyzed for in six 0-6 inch surface sediment samples from river stations (no mudflat stations were analyzed). Be⁷ samples from a finer interval than 0-6 inches should be collected to provide more useful information. Typically Be⁷ is analyzed from the 0-1 cm sediment interval. The RI Report states that Be⁷ was

above detection at only one station (005, 0.69 pCi/g). Four of the five stations had higher percent fines (76-91%) than station 005 (64%) which indicates that they are more likely to be depositional areas than Station 05. The 0-6 inch samples are not appropriate for analysis of Be^7 . If the sedimentation rate was half an inch per year then 92% of the sample would be expected to have non-detectable levels of Be^7 thus severely diluted the Be^7 concentration in the upper half-inch. The Be^7 data from the 0-6 inch samples should not be used to draw conclusions regarding depositional nature of sampling locations.

Cs^{137} was not detected in any sample and the RI Report concluded that this supports the hypothesis that the study area is not a depositional environment. No samples were collected in the mudflats. Further data should be presented to indicate that the methods used were appropriate (e.g., that they would result in detections of Cs^{137} in a reference sample such as a mudflat sample). It seems unlikely that all sediment in the study area was deposited prior to 1952.

Pb^{210} was analyzed for and detected in all of the samples, which were analyzed for Cs^{137} . The RI Report states that there was no linear pattern of Pb^{210} concentration with depth. Citing this lack of linear pattern and the assumption "that the rate of sediment deposition at given location is constant through time", the RI Report concluded that the data supported minimal if any net deposition over time in the study area. No samples were collected in the mudflats. Further, the constant sediment deposition rate assumption is of questionable validity. Deposition rates can vary based on variations in flow conditions at a given location and changes in overall flow and sediment loading characteristics of a river. Also, once sediments are deposited they can be disturbed by both natural and anthropogenic activities (e.g., daily tidal fluctuations, storms, floods, bioturbation, dredging, prop wash) which can mix sediments from various depths and disguise depositional patterns.

Pursuant to the above comments, the radiochemistry data is not useable to draw conclusions regarding sediment deposition. While the radiochemistry data could be recollected, it is not required for the BERA.

Response:

It is important to understand that grab samples were collected from the top 6 inches of sediment; however, only the 0- to 1-inch interval was submitted to the laboratory for Be^7 analysis. In addition, the assertion that the data are "not useable" is incorrect. The samples were collected and analyzed in accordance with well established methods per the NJDEP-approved RIWP. Taken together, the three independent lines of radiodating evidence can be used to evaluate depositional patterns, or lack thereof. However, as agreed upon in the October 22, 2008 meeting, the radiodating portion of the revised RI Report will be modified to remove all associated conclusions.

Comment:

9. It would be appropriate to include an analysis of Total Extractable Petroleum Hydrocarbon (TEPH) data (Appendix D, Table D-9), in conjunction with the analysis of Naphthalene and total PAHs. A key finding of this study, which should be discussed in this section, is the presence of a petroleum product and naphthalene source area at transect 11, based on highly elevated concentrations of TEPH and percent levels of individual and total PAH and naphthalene. The need for further delineation and source attribution should be highlighted as a data gap.

Response:

A summary of total extractable petroleum hydrocarbon (TEPH) data is included in Section 4.1.9.1 (page 4-26) of the RI Report. Further assessment of the TEPH data, is included in the revised RI Report. Delineation of TEPH and PAHs along Transect 11 will be included in the Supplemental RIWP and results will be evaluated to address data gaps pertaining to source attribution.

Comment:

10. **A sediment screening criterion of 0.0036 ug/kg (NOAA AET, 2004) should be used for unadjusted sediment concentrations of 2,3,7,8-TCDD. This information should be added to Tables 6-3 through 6-6.**

Response:

The value of 0.0036 µg/kg recommended for 2,3,7,8-TCDD is based on the National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Tables (SQuiRT). The PRG disagrees that this is a representative screening value for dioxin effects on benthic organisms or the ecological communities in the HRSA as a whole. This value represents the lowest Apparent Effects Thresholds (AET) value, developed from limited data on AET for *Neanthes* sp. in marine sediments in Puget Sound (Washington). The value is not easily compared directly to other benchmarks based on single chemical models and broader data sources. The value has never been published nor peer reviewed. Its relevance as a screening guideline is questionable in the context of the HRSA when compared to the other guidelines being used in this SLERA that have been published and peer reviewed.

As agreed upon in the meeting among the PRG, NJDEP and other partner agencies on October 22, 2008, the existing SLERA will not be revised. Instead, an evaluation and selection of appropriate screening values for all appropriate constituents will be conducted as part of the BERA.

Comment:

11. **Section 6.2 of the RI Report "Problem Formulation/Conceptual Site Model" addresses general contaminant sources to the Hackensack River (sewers, CSOs, permitted and open pipe outfalls). The three (3) subject Responsible Party sites must be identified as source areas. The additive contaminant contribution and ecological risk specifically associated with these three sites must be assessed. A Conceptual Site Model that includes contaminant migration pathways specific to each of the former Diamond Shamrock, former Standard Chlorine and former Koppers Seaboard sites, including historic uncontrolled discharges, the discharge of contaminated groundwater, etc, must be developed for the BERA.**

Response:

The PRG agrees that BERA efforts must specifically address and quantify the incremental contribution of the three sites under investigation in this RI Report to any potential risks in this urban system. This is particularly important given the urban setting and associated presence of chemical constituents in the lower Hackensack River. A more detailed conceptual model that includes the migration pathways specific to the three sites under investigation was developed and is included in the revised RI Report.

Comment:

- 12. Screening level exposure modeling must be conducted pursuant to Comment 6 of the NJDEP's June 20, 2006 conditional approval letter.**

Response:

It was the PRG's intention to conduct screening-level modeling as part of the SLERA process, as stated in the SLERA Work Plan. However, no data exist for COIs for the various receptors in the food web of the HRSA. As such, it is not possible to test and calibrate even a screening-level model on bioaccumulation. The results of any hypothetical modeling using just sediment data, without at least some biota tissue data to calibrate the model, would lack any scientific credibility. This is a key reason it was concluded in the SLERA that data gaps exist and a BERA is warranted for this site.

As agreed to in the meeting held between the PRG, NJDEP and other partner agencies on October 22, 2008, the existing SLERA will not be revised. The need for SLERA modeling will be replaced with actual data and the construction of a credible food web exposure model in the BERA.

Comment:

- 13. Pursuant to the findings of the RI Report, a Baseline Ecological Risk Assessment (BERA) is required. The Responsible Parties must also submit a revised RI Report and Screening Level Risk Assessment. The revised RI Report must identify data gaps and must propose that a BERA be conducted for the three (3) subject sites. Additional data required to address NJDEP's comments (including NJDEP's June 20, 2006 letter) must be collected and evaluated during the BERA. The NJDEP agrees with the Responsible Parties' recommendation that it would be valuable to discuss the scope of a future BERA. Therefore, it is recommended that within five (5) calendar days of receipt of this letter, the Responsible Parties provide suggested dates to schedule a technical meeting.**

Response:

As stated in response to Comment No. 1, a Supplemental RIWP that includes a full plan for the conduct of the BERA will be developed and submitted to NJDEP on January 30, 2009. The scope of this plan and data use objectives (DUOs) were discussed at the October 22, 2008 meeting among the PRG, the NJDEP and partner agencies.

As stated in our responses above, the PRG believes that the SLERA is complete and was prepared consistent with NJDEP and U.S. Environmental Protection Agency guidance. As a result of the SLERA, it was concluded that a BERA is needed. Site-specific data will be collected to support the BERA, and this will become the definitive ecological risk assessment for this site. As such, the PRG does not believe that anything further can be accomplished from a revised SLERA. As agreed to in the meeting among the PRG, NJDEP and other partner agencies on October 22, 2008, the existing SLERA will not be revised. Instead, the focus of future efforts will be on development of the BERA.

Please feel free to call if you have any questions or comments regarding the above.
Sincerely,

Beazer East, Inc.

A handwritten signature in black ink, reading "Mitchell D. Brouman". The signature is written in a cursive, flowing style.

Mitchell D. Brouman
Environmental Manager

MDB/dmn

Enclosure

cc: Mindy Pensak, USEPA
Timothy Kubiak, USFWS
Diane Wehner, c/o Reyhan Mehran, NOAA
Enrique Castro, Tierra Solutions, Inc.
Margaret W. Kelly, Esq., SCCC